

U.S. Patent Application Serial No. 10/561,963
Response to OA dated July 8, 2009

REMARKS

Claims 9 and 11, the independent claims, have been amended to now specify that the seal ring is located in the back pressure space and that the hardened layer subjected to surface processing is not formed on the sliding portion between the back plate surface and the seal ring, but on the other portions excepting the sliding portion between the plate back surface and the seal ring. No new matter is involved.

The Office Action objected to the word "said" at a portion of Claim 9 and Claim 11. The claims are amended in a manner that should remove this rejection under 35 U.S.C. 112, second paragraph, and removal of the rejection is respectfully requested.

In the Office Action, Claims 9-12 were rejected as obvious under 35 U.S.C. 103(a) in view of a combination of APA, Takei (JP 63-28980) and Yamada (U.S. 5,468,130). Reconsideration and removal of this rejection are respectfully requested in view of the present claim amendments and the following remarks.

The Office Action applies APA to show a similar scroll compressor, and admits that APA fails to disclose only the back plate surface of the orbiting scroll being subject to surface processing. Takai is then cited as teaching subjecting only the back plate surface of an orbiting scroll (18) to surface processing to form a hardened layer, and it is alleged that it would have been obvious to so alter the APA. It is also alleged that Yamada shows, relative to Claims 10 and 12, nickel phosphorous plating processing carried out as a surface processing.

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Applicants would point out that, in the present claimed scroll compressor, two members, that is, the frame and the seal ring slide on the back surface of the orbiting scroll and the portion which comes in contact with the frame on the orbiting scroll is provided with the hardened layer and the portion which comes in contact with the seal ring is not provided with the hardened layer.

With this structure, even if the plate back surface of the orbiting scroll is pushed against the flat surface of the frame, no seizing is generated due to the hardened layer formed by the surface processing, and a reliable scroll compressor is obtained. Moreover, it is possible to reduce the friction resistance between the seal ring and the plate back surface of the orbiting scroll, enhance the reliability of the seal ring and the plate back surface of the orbiting scroll, and to reduce the sliding loss, thereby enhancing the performance.

The Office Action admits that APA fails to show only a back plate surface being subject to surface processing. Takei does not show division into a portion which is not provided with the hardened layer and a portion which is not provided with the hardened layer under the condition that two members, that is, the frame and the seal ring slide on the back surface of the orbiting scroll.

The present invention does not use merely a well-known surface processing, but specifies the portion which is provided with the hardened layer and the portion which is not provided with the hardened layer in the specific members, and thus it has the advantages as mentioned above.

None of the references or their combination teach or suggest a back plate surface where a hardened layer subjected to surface processing is formed not on the sliding portion between the back plate surface and the seal ring, but only on the other portion exempting the sliding portion between

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the back plate surface and the seal ring, as now specified in amended Claims 9 and 11.

The Yamada reference also is devoid of such a teaching or suggestion.

In view of the aforementioned amendments and accompanying remarks, Claims 9-12, as amended, are believed to be patentable and in condition for allowance, which action, at an early date, is requested.

In the event that this paper is not timely filed, the applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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